

Department of Animal, Dairy and Veterinary Science  
Mid-Term Graduate Review of 5-Year Plan  
December 31, 2014

**Program description:**

The Department of Animal, Dairy, and Veterinary Sciences (ADVS) offers comprehensive and exciting careers for students seeking MS and PhD degrees in the Animal, Dairy, and Veterinary Sciences and in Toxicology. Students choose from a series of knowledge-based specializations in Animal Nutrition, Animal Molecular Genetics, Reproduction and Development, Animal Health and Disease and Toxicology. Students specializing in these disciplines become highly trained in the areas of animal reproduction and development, animal nutrition, livestock and dairy management, animal health and disease, virology, toxicology, and molecular genetics. They also become skilled in the applications of molecular biology, genomics, metabolomics, proteomics and bioinformatics. For students choosing careers in production animal agriculture, ADVS offers an Animal and Dairy Management degree option. Management options prepare students for the challenges facing the animal industry and commodity groups in the 21st century.

**Synopsis of 5-year plan:**

ADVS identified five primary needs that will advance the mission of its graduate programs and offer a more optimized learning experience for its students.

1. Financial support of graduate students in the form of tuition support, graduate assistantships, and funds for student travel to conduct or present research.
2. Financial support to aid in recruitment of top graduate students to the limited number of open positions.
3. Maintain a critical mass of active researchers in topic areas of the department. Some core areas are currently deficient in personnel, namely the animal nutrition program and animal/dairy management.
4. Maintain current graduate course offerings, and supplement with additional advanced courses (especially in the molecular sciences) to graduate students.
5. Emphasis throughout graduate student program on career counseling.
6. More structured application of directed mentoring strategy (via advisor and dissertation committee).

**Graduate program changes and implementation of changes (Commitments and Progress)**

In 2011 the degree programs (Animal Science, Dairy Science and Bioveterinary Science) were consolidated into a one-degree program. Prior to 2011, three separate degree programs were offered with various specializations. These programs were spread out over 20 - 30 students. This resulted in lower enrollment numbers in each degree program. Further, the Bioveterinary Science degree program was often confused with the undergraduate Bioveterinary Science emphasis. Therefore in the economy and better management of the existing graduate programs, the three degree programs were brought under the umbrella of a single MS and PhD degree program with 5 specializations: Animal Management (Plan A and B), Animal Health and Disease, Animal Molecular Genetics, Animal Nutrition, and Reproduction and Development. The Animal Management specialization is management based and therefore is only offered as a MS program of study. Prior to 2013, ADVS was one of several participating departments in the Interdepartmental Toxicology Graduate Program. Particularly during the past 10 years, graduate students were predominantly from ADVS, mainly because the majority of the core faculty were from ADVS. Since few students from other departments sought degrees in Toxicology, and very few faculty from other departments and colleges were active in the Toxicology degree program, a recommendation was made by the 3 deans from the colleges involved was for program discontinuance. As the movement for the discontinuation of the program began, ADVS requested that the toxicology program be restructured and brought under the umbrella of the Department. The program request was approved in 2013 resulting in MS and PhD degree programs in Toxicology. Therefore the restructuring of the graduate program offerings in ADVS has resulted in two separate degree programs: MS and PhD in ADVS with 5 specializations and an MS and PhD in Toxicology.

**Program initiatives in the 5-year plan (Commitments and Progress):**

1. Financial support of graduate students in the form of tuition support, graduate assistantships, and funds for student travel to conduct or present research.

At the beginning of the 5-year plan ADVS offered 8 research assistantships (MS 13,000 and PhD 16,000 with subsidized health benefits. Today, that number has been increased to 11 and a new ADVS Doctoral Research Fellowship has been established (\$18,000 with subsidized health benefits. A student receiving this fellowship also qualifies for a tuition award. Additionally, ADVS and the new School of Veterinary Medicine offer a resident program in Pathology/MS or PhD. A student in this program must have a Doctor of Veterinary Medicine and will prepare to become board certified in pathology while completing either an MS or PhD. The stipend for this program is \$32,000 with subsidized health benefits and the student qualifies for a tuition award. Therefore, ADVS and the School of Veterinary Medicine have made a significant contribution to increasing graduate student assistance by providing more research assistantship support. The Department also encourages the

research faculty to include graduate student stipends as a budget item where permissible on their grants.

2. Financial support to aid in recruitment of top graduate students to the limited number of open positions.

ADVS successfully competed from among the 5 Departments in the College of Agriculture and Applied Sciences for a Presidential Doctoral Research Fellowship (PDRF). The student was recruited and brought to campus in the recruitment process. A second PDRF was offered to CAAS. The applicant from ADVS had the strongest academic record, but the fellowship went to another department mainly because ADVS had already received a PDRF. RGS was approached on this issue and it was agreed between RGS and ADVS that a 50/50 match totaling \$20,000 would be offered for 4 years similar to a PDRF. Another student was highly recruited and brought to campus during the interview process and chose to enter a PhD program in ADVS. A first time ADVS Doctoral Research Fellowship was made available in 2013 and a highly qualified and highly recruited student was offered the fellowship. This student was brought to campus during the recruiting process. All of the doctoral applicants were out-of-state. Another top student was being recruited into a PhD program in ADVS and the major professor could only offer \$16,000/year from an extramural grant. The Department augmented that amount by \$4,000 and the student accepted the offer to come to USU, although she was being highly recruited by other universities. The student was brought to campus in the recruiting process. Therefore, ADVS recruited 4 academically outstanding graduate student scholars in fulfillment of its initiative to recruit top graduate students.

Furthermore, it is now Department policy that all extramural grant applications, where allowable, must factor in graduate student support in the budget. In addition the Department Head has informed the research faculty that, within means, the Department will augment assistantships if it will result in matriculating graduate student scholars.

3. Maintain a critical mass of active researchers in topic areas of the department. Some core areas are currently deficient in personnel, namely the animal nutrition program and animal/dairy management.

Within the past 3 years ADVS has recruited and successfully hired 6 highly qualified faculty to new positions primarily within the USU School of Veterinary Medicine. Drs. Mason, Meyer, Meyer-Frica, Rutigliana, Campbell and Vanderwall. All have substantial research appointments except for Dr. Vanderwall who was appointed ADVS Department Head in

September 2014. Dr. Vanderwall will still maintain an active research program and will continue to mentor graduate students. ADVS anticipates these faculty hires will eventually boost the number of graduate students in ADVS by 25% and thereby grow the program as specified in the 5-year plan.

Recently a job description was posted on the HR website for a faculty (instructor/researcher) in animal nutrition with emphasis in genomics and epigenetics. This will fill a critical need stipulated in the 5-year plan.

4. Maintain current graduate course offerings, and supplement with additional advanced courses (especially in the molecular sciences) to graduate students.

The following School of Veterinary courses (VM) were cross-listed for ADVS graduate students and for students from other departments such as biology.

Vet Microscopic Anatomy (VM 7510 - ADVS 7510)  
Vet Physiology I (VM 7519/ADVS 7519)  
Vet Physiology II (VM 7520/ADVS 7520)  
Vet Immunology (VM 7534/ADVS 7534)  
Vet Virology (VM 7535/ADVS 7535)  
Vet Bacteriology (VM 7536/ADVS 7536)  
General Pathology (VM 7545/ADVS 7545) - 2 hour course without lab for graduate students.

5. Emphasis throughout graduate student program on career counseling.

ADVS has appointed a faculty member (Dr. Lee Rickords - Graduate Programs Coordinator) that will advise graduate students on career opportunities. Dr. Rickords is well informed on opportunities in genetics, reproduction and molecular biology. In other areas, he may direct students to other faculty in ADVS or other departments whereby the student can receive the guidance they need.

6. More structured application of directed mentoring strategy (via advisor and dissertation committee).

ADVS will continue to include students as authors on refereed scientific publications, continue with an excellent seminar series that brings outside scientists to campus to interact with our students, and continue to support a high level of student involvement in research presentations at local/national/international meetings. The Department has developed an accountability tracking system that enhances student progress, updates and provides online access to the ADVS Graduate Student Handbook,

enhances accountability for faculty mentorship, established an annual ADVS Graduate Student/Mentor Symposium that enhances student-faculty interaction and education, and has developed a foundational research course that provides ADVS graduate students with a basic understanding of best-practices for working in nationally competitive research laboratories. These measures will increase faculty accountability for graduate student mentorship and will provide students with a clearer pathway to completion of their degree program.

### **Overall Accomplishments**

Since 2009, ADVS has made significant improvements in its graduate programs (e.g., more assistantships, improved website, successfully recruited more top students, hired additional faculty, currently filling a critical faculty position in Animal Nutrition, offers more graduate level courses to students in ADVS and other departments such as Biology, and has taken on a greater administrative role in mentoring and monitoring student progress). Students that enter a degree program complete their program of study and become employed in professional and academic positions. Because of the various initiatives that have been put into place, new graduate student enrollment (based on fall semester counts) is now on the increase: 2012 = 5, 2013 = 4, and 2014 = 12).